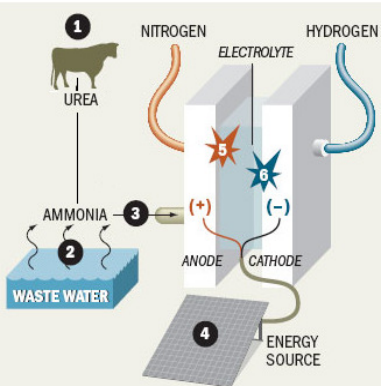
A PROCESS FOR WASTEWATER REMEDIATION

TECHNOLOGY OVERVIEW



The technology provides a novel mechanism to clean industrial wastewater which is highly contaminated with toxic pollutants in both gaseous and aqueous states. Water with undesired concentrations of ammonia along with several other metallic and chemical pollutants has been treated.

Synthetic wastewater with low concentrations of ammonia was treated at the bench scale. The cell used potassium hydroxide (KOH) as electrolyte and operated at ambient temperature. The efficiency of the process was determined and found to be above 99.99% for the removal of ammonia.

The ammonia in the wastewater undergoes oxidization to release nitrogen in the atmosphere. The reaction also produces clean water and hydrogen which can be can be converted into energy and stored in fuel cells if desired. This energy can be used to power the wastewater treatment plant in turn. The technology performs dual benefits of water purification and energy production while removing effluents from industrial, agricultural and residential wastewater.

POTENTIAL FIELDS OF USE

The technology provides a mechanism for the low cost production of renewable, clean energy. The US annually spends more than $4 billion in energy to run water purification and wastewater treatment facilities. This process also adds more than 45 million tonnes of greenhouse gases in the atmosphere. Currently, each state spends more than several millions to treat industrial and domestic sewage. The country also spends more than $800 million on small scale water reuse projects. The technology provides a process that would save a huge amount of capital required to treat wastewater in addition to eliminating the environmental hazards created by this process.

BENEFIT ANALYSIS

The technology provides a number of key benefits over existing models:

- Reduces costs of hydrogen production by more than 80% as compared to existing processes. This enables the production of energy for a fraction of cost incurred by available technologies.
- Increased rate of removal of various metals suspended in the wastewater by using electrolysis.
- Releases Nitrogen in the atmosphere without any hazardous consequences.
- Eliminates any derogatory effect on the environment while treating the wastewater, unlike most available remediation techniques.

STAGE OF DEVELOPMENT

The performance an d efficiency of the cell has been determined at the bench scale. Scale up to a large scale prototype is intended.

FUTURE DEVEOPMENT

Researchers are focused towards scale up of the bench scale prototype.

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LICENSING OPPORTUNITIES

Several patenst for the technology are pending. Licensing opportunities are available.

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